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07-135

Before the
Federal Communications Commission
Washington, DC 20554

FILED/ACCEPTED

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Federal Communications Commission
Office of the Secretary

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| In the Matter of |) | |
| |) | |
| Qwest Communications Corporation, |) | File No. EB-07-MD-_____ |
| |) | |
| Complainant |) | |
| |) | |
| v. |) | |
| |) | |
| Farmers and Merchants Mutual Telephone |) | |
| Company, |) | |
| |) | |
| Defendant |) | |

DECLARATION OF PETER B. COPELAND

1. My name is Peter B. Copeland. My business address is 1801 California St. 47th floor, Denver, Colorado 80202. My current position is Director, Cost and Economic Analysis, in the Public Policy organization of Qwest Communications Corp. ("Qwest"). In this position, I supervise the development of all forward-looking regulatory cost studies for Qwest. In addition to my experience in developing wholesale and retail cost studies, I have also had responsibility for the development of models of the local exchange network, universal service advocacy, and materials relating to jurisdictional separations and rate development. This declaration is prepared in support of the above-captioned formal complaint by Qwest against Farmers and Merchants Mutual Telephone Company ("Farmers"). I make the statements in this declaration based

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upon my personal knowledge and my review of Qwest records maintained in the ordinary course of business and prepared in anticipation of this litigation.

2. The purpose of this Declaration is to address the costs that Farmers has – or has not – likely incurred as its traffic volumes have increased dramatically. *See generally* Declaration of Lisa Hensley Eckert (“Hensley Eckert Decl.”). Specifically, I explain below why, when Farmers’s traffic volumes increased without any concomitant increase in the number of access lines it served, it is almost certain that its costs rose at a much slower rate than did its traffic figures.

3. First, I describe generally why an increase in traffic would not, on its own, cause a proportional increase in costs. Then, I show how the Federal Communications Commission (“Commission” or “FCC”) has already recognized this principle, in approving average-schedule settlement formulae for use by the National Exchange Carrier Association. These formulae recognize that when traffic volumes grow to the extent Farmers’s volumes have grown, in isolation of related access line count growth, volume growth is likely to outpace growth in costs by a ratio of almost 7 to 1.

4. In short, this Declaration shows that when Farmers billed Qwest and other IXCs for terminating access under its existing tariff for increasing volumes of what it classified as terminating access, *see* Hensley Eckert Decl. at ¶ 14, those bills almost surely reflected figures exceeding its related costs many times over – and therefore well above Farmers’s authorized rate of return.¹

¹ I assume for purposes of Count I of Qwest’s complaint that the traffic at issue here “terminates” in Farmers’s exchange. References in this declaration to “termination” do not reflect the view that this term properly characterizes all traffic delivered by Qwest, directly or indirectly, to Farmers.

I. MOU Growth Alone Does Not Lead to Proportional Growth in a Carrier's Terminating Access Costs.

5. Although the Farmers's charges at issue in Qwest's Complaint are referred to generally as being "traffic sensitive," and are applied on a per-minute of use ("MOU") basis, the cost that these charges are designed to recoup do *not* rise in proportion to MOU growth. Those costs relate to two specific aspects of Farmers's network: its end office switch, and the trunks from that end office switch to the tandem switch.² I address these in turn.

a. Farmers's End-Office Switching Costs Have Not Risen in Proportion to its Increased Traffic Volumes.

6. The traffic-sensitive costs incurred by use of an end-office switch can be broken down into two categories: (1) costs relating to the "line side" of the switch (*i.e.*, those costs associated with delivery of traffic from end-office trunk ports connected to the tandem switch to the called party, when such traffic is delivered to the called party over switched common lines) and (2) costs relating to "trunk side" of the switch (*i.e.*, those costs associated with receipt of traffic sent to the end-office switch from a tandem switch). For reasons described below, these costs almost surely have not risen in proportion to Farmers's increased traffic figures.

7. ***Line-Side End-Office Switching Costs.*** An end-office switch is equipped with line-side switch ports used to connect individual access lines to the switch. In simple terms, each access line is associated with a single line-side switch port. Line-side costs therefore will rise when a carrier is required to install new line-side switch ports. An increase in the number of MOUs transiting the switch will not, however, result in any increase in line-side costs if that increase is not tied to any significant increase in access

² The tandem switch itself is not owned by Farmers, and thus is not included in this analysis.

line usage. This is so because the line-side switch ports that switch manufacturers sell to LECs are engineered with sufficient capacity to support any reasonable increase in usage that may be delivered to those access lines during the life of the switch. Here, Farmers's line counts have not increased: Based on filings made with the Universal Service Administrative Company ("USAC"), Farmers used 833 access lines in the fourth quarter of 2004, 862 lines in the fourth quarter of 2005, and 805 access lines in the fourth quarter of 2006. Farmers has projected, moreover, that it will have only 785 access lines in the second quarter of 2007. Thus, it appears that the tremendous expansion in Farmers traffic described in the Hensley Eckert Declaration was not attended by a similar increase in access line counts.³ Thus, line-side end-office switching costs are not affected by the huge increase in MOUs that are being received by Farmers's switch and handed off to the FSPs.

8. *Trunk-Side End-Office Switching Costs.* An end-office switch is also equipped with trunk-side switch ports generally used to connect the end-office switch to other switches (typically tandem switches). As with line-side switch ports, trunk-side switch ports are sold with all the related traffic capacity components necessary to support any level of usage associated with a given trunk. Thus, the increased trunk-side costs associated with increased traffic arise solely as a result of any increase in the number of necessary trunk-side switch ports.

9. The data presented below demonstrate that the cost that the typical Bell Operating Company ("BOC") incurs to add trunk-side ports is about \$0.00072 per

³ The absence of significant access-line growth in the presence of such significant demand growth indicates that the traffic at issue here was directed not over access lines at all, but rather over DS1 or ISDN PRI trunks, or other similar facilities, purchased separately from Farmers. Traffic delivered using such facilities would never touch the line side of the switch, but instead would be connected to the switch through trunk-side ports.

minute. The methodology I used to make this calculation was as follows. First, based on BOC cost figures, I assumed a per-trunk port investment, fully loaded with installation costs, sales tax, power and interest during construction, of \$197 per trunk. I multiplied this figure by a 0.0329 cost factor⁴ to derive a monthly cost per trunk of \$6.48. I then divided that cost by 9000 MOUs – a common trunk-usage assumption – to derive a per-MOU cost of \$0.00072. These calculations are set forth below.

| Estimated Cost per MOU for Trunk | |
|---|-----------|
| Loaded Investment per DS0 Trunk for BOC | \$ 197 |
| Monthly TELRIC+Common Cost Factor to convert investment to monthly cost | 0.0329 |
| Monthly Cost per DS0 Trunk | \$6.48 |
| MOUs per Month per Trunk based on common industry trunk usage standard | 9,000 |
| Cost per MOU for BOC Trunk | \$0.00072 |
| | vs. |
| Farmers's Tariff Rate for Local Switching | \$0.02532 |

Thus, for a BOC, additional trunk capacity would cost at most approximately \$0.00072 per additional minute. In contrast, however, Farmers's tariff included a charge of \$0.025320 per MOU for the provision of end-office ("local") switching functions. *See* Hensley Eckert Decl. at Ex. 9. Thus, Farmers's end-office switching charges recover more than 35 times the typical BOC's additional cost. While it is reasonable to assume

⁴ Cost factors of this sort are designed to convert investment into monthly capital expenses (including allowances for depreciation, cost of money, and income taxes), maintenance expense, and other support and common costs permitted by the FCC's TELRIC rules. The factor used here formed, in part, the basis for the Qwest UNE rates that the Commission found to be TELRIC-compliant in approving the company's section 271 application to provide long-distance service in Iowa. Specifically, the factor was used in deriving Qwest's Colorado TELRIC rates, which were then used as the basis for "benchmarking" Iowa rates. This figure is actually higher than Qwest's data suggest is appropriate, but the presumption works in Farmers's favor here, because it reduces the disparity between the cost derived in the chart and the rate set forth in Farmers's tariff. Put differently, use of a more realistic cost factor here would show that Farmers's rate is even more drastically above its likely trunk-side switch port cost than is indicated in the chart.

that a small LEC such as Farmers may pay more per trunk than the typical BOC, there is no basis for assuming a 35-fold disparity in costs. Thus, Farmers' tariffed rate would greatly over-recover its trunk-side switching costs.

10. Based on the above, as Farmers's MOU volumes increased, it experienced no line-side cost increases, and only experienced trunk-side increases associated with the need for new trunk-side switch ports from the tandem switch to the end-office switch. These costs, as described above, were far below Farmers's tariffed interstate end-office switching rates.

b. Farmers's Tandem Transport Costs Have Not Risen in Proportion to its Increased Traffic Volumes.

11. Farmers's tandem transport costs are also very unlikely to have risen in proportion to its traffic volumes. This is true because the economics of trunk connections between tandem switches and end-office switches demonstrate increasing efficiencies with increasing usage. As traffic levels increase, carriers generally transition from using DS1-capacity facilities (which carry the equivalent of 24 voice-grade communication paths, also known as DS0 circuits), to DS3-capacity facilities (which in turn carry the equivalent of 28 DS1s, or 672 DS0s), to OCn facilities (which carry many times the capacity of a DS3 link). This progression up the capacity hierarchy entails efficiency gains and thus reduces per-MOU costs. In fact, once the carrier shifts to fiber-optic facilities (generally at the DS1 or DS3 level), increased traffic flows will hardly increase costs *at all*. This is because a fiber-optic cable's capacity is not inherently limited, but rather is governed by the electronics equipment used to "light" the fiber. Thus, depending on the electronics installed, the same fiber facility once configured to operate

at DS1 capacity can later be used to transmit at DS3 or OCn capacity with very few additional costs.⁵

12. Thus, Farmers's tandem transport costs did not rise at a pace comparable to the pace at which its traffic figures grew during the period relevant to Qwest's Complaint. Instead, as traffic figures increased, per-MOU costs declined, slowing the growth in costs as time went on.

13. In summary, there is no reason to believe that Farmers's costs increased in proportion to the growth in its traffic figures. The new traffic likely imposed no new line-side end-office switching costs, and only limited trunk-side switching costs that remained far below the local switching charges contemplated by Farmers's access tariff. While its increased traffic likely did increase its tandem transport costs, MOU growth would also have entailed increased scale efficiencies, ensuring that costs did not grow proportionally.

c. Increased Usage Per Trunk Further Increases Economies of Scale For Both End-Office Switching and Tandem Transport Unit Costs.

14. In addition to the economies of scale discussed above for end office switching and tandem transport, there are yet further efficiencies that occur with increased volume. In June of 2005, the total interstate traffic to and from Farmers could be carried on approximately 40 DS0 circuits. By the end of 2006, the DS0 circuits

⁵ See, e.g., *Unbundled Access to Network Elements, Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers*, 20 FCC Rcd 2533, 2616 ¶ 150 (2005) (subsequent history omitted) ("The most significant portion of the costs incurred in building a fiber loop results from deploying the physical fiber infrastructure into underground conduit to a particular location, rather than from lighting the fiber-optic cable. The record reflects that for these reasons, LECs do not typically construct fiber loop facilities at lower capacity levels, such as DS1 or DS3, but rather install high-capacity fiber-optic cables and then use electronics to light the fiber at specific capacity levels, often 'channelizing' these higher-capacity offerings into multiple lower-capacity streams.").

required number in the thousands. The average usage per circuit for 40 circuits is about 40 minutes per hour in the peak hour. This average per circuit increases to 54 peak hour minutes with the amount of interstate minutes Farmers was experiencing in December of 2006. This reflects a 35% increase in efficiency. This increased efficiency is a mathematical phenomenon explained by the "Poisson Traffic Model." This model is traditionally used in engineering telecommunications facilities to estimate the amount of traffic that can be offered over a given number of circuits in order not to exceed blocking of 1% (P.01) of the attempted calls during a one-hour period – usually the "peak" or "busy" hour. The Poisson Traffic Model reflects the fact that with calls being connected and disconnected throughout the peak hour, there cannot be a full 60 minutes of usage on the average trunk. However, the amount of usage per circuit increases as the total offered traffic increases. In short, even apart from the efficiencies discussed above, the per-MOU costs associated with end office trunk ports and transport to the tandem switch will decline as volumes increase on account of more efficient use of each trunk circuit.

II. NECA's FCC-Approved Average Schedule Settlement Formulae Recognize that MOU Growth Alone Does Not Lead to Proportional Growth in a Carrier's Terminating Access Costs.

15. The scale-economy principles discussed above have been recognized by the Commission in its approval of the formulae used to calculate settlements for average-schedule companies in the National Exchange Carrier Association ("NECA") access-charge pool. As described more fully in Qwest's Complaint, these formulae are used to calculate the recovery due to average-schedule companies for their provision of access services. They are proposed annually by NECA, put out for comment, and ultimately

approved (with or without modification) by the Commission.⁶ Thus, settlements produced using the NECA settlement formulae represent Commission-endorsed estimates of a small carrier's costs plus the authorized rate of return. Indeed, in the context of the small-carrier rule at issue in this Complaint, 47 U.S.C. § 61.39, the Commission permits some LECs to continue to rely on the settlement it would have received had it remained in the NECA pool as a proxy for its costs long after its exit from the pool. 47 C.F.R. § 61.39(b)(2).

16. Consistent with the analysis in Part I of this Declaration, the current NECA settlement formulae predict that Farmers's traffic volume increases have *not* produced a proportional increase in Farmers's costs. Indeed, those formulae predict that Farmers's costs have not even grown by 15 percent of the amount its volumes have grown. Put differently, while Farmers's monthly MOU figures – and therefore its access bills – increased by 238 times between June 2005 and December 2006, its costs, as predicted by the FCC-approved NECA settlement formula, have only increased by approximately 35 times.

17. The two most critical inputs to the NECA settlement formulae are the number of interstate access minutes transiting the network and the number of access lines used by the average-schedule carrier.

18. As described above, Farmers's line-count figures have not increased during the time period relevant to Qwest's complaint, and have in fact decreased modestly. For purposes of the present analysis, I am assuming that Farmers's line counts have remained constant during this period.

⁶ See 47 C.F.R. § 69.606; *National Exchange Carrier Association, Inc. 2006 Modification of Average Schedules*, 21 FCC Rcd 6220 (WCB 2006).

19. In contrast, Farmers's traffic volumes have increased dramatically. As described more fully in the Declaration of Lisa Hensley Eckert, Qwest delivered (directly or indirectly) between 32,000 and 45,500 MOUs per month to Farmers for its retail and wholesale long-distance customers during the first half of calendar year 2005. In June of that year, Qwest delivered 42,413 MOUs to Farmers. Beginning the next month, traffic delivered by Qwest to Farmers began to rise rapidly – to 66,354 in July 2005, to 732,977 MOUs in August 2005, to 2,221,767 MOUs in August 2006, and to 10,099,944 MOUs, over 238 times the June 2005 figure, in December 2006. Hensley Eckert Decl. at ¶¶ 8-9; *id.* Ex. 1.

20. There is no reason to believe that trends affecting Qwest's Farmers-bound traffic would not apply with equal force to other IXC's Farmers-bound traffic. Thus, the growth rate attributable to Qwest's Farmers-related traffic can be applied to Farmers's *total* traffic figures to show how those total traffic figures likely ballooned. According to Table 8.4 of Universal Service Monitoring Report in CC Docket No. 98-202, released Dec. 2006, 33,122,646 MOUs of interstate access traffic were originated or terminated on Farmers's network in 2005. According to the figures presented in Exhibit 1 of the Declaration of Lisa Hensley Eckert, 8,559,234 of those MOUs involved Qwest's network. Thus, Farmers's total interstate access MOUs are roughly four times those to or from Qwest's network (*i.e.*, $33,122,646 / 8,559,234$).

21. Using this ratio, we can estimate that in June 2005 – the last month before Farmers left the NECA pool and before its volumes began to rise – about 169,652 MOUs (42,413 Qwest-related MOUs, times four) terminated on Farmers's network. In contrast, we can estimate that about 2,931,908 MOUs (732,977 Qwest-related MOUs, times four)

terminated on Farmers's network in August of 2005. Similarly, we can estimate that about 40,399,776 MOUs (10,099,944 Qwest-related MOUs, times four) terminated on Farmers's network in December of 2006.

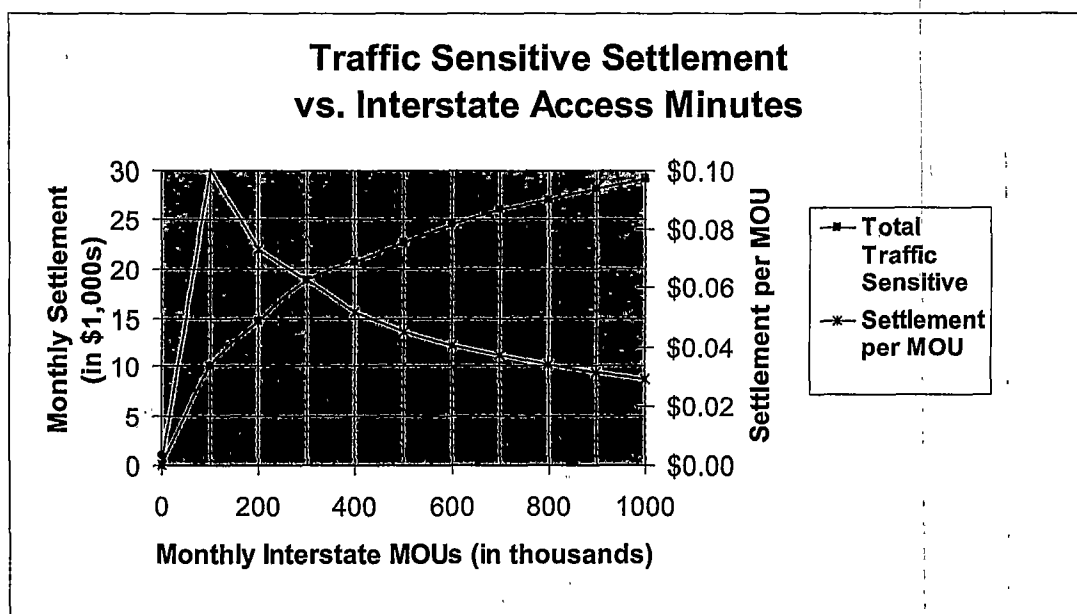
22. Application of these figures to the NECA settlement formulae are reflected in Table 1 below. This table reflects monthly NECA settlements given the traffic volumes derived above for specific months, holding access line counts constant. As Farmers's traffic volumes (and bills) increased, its costs increased at a much slower pace. In August 2005, its terminating access volume had grown by 1628% from its June 2005 volume, but its traffic-sensitive settlement would have grown by only 280% from its June 2005 settlement. In December 2006, its terminating access volume had grown by 23,713% of its June 2005 volume, but its traffic-sensitive settlement would have grown to \$462,757, a 3,377% increase from June 2005. Thus, assuming Farmers applied its tariffed per-MOU interstate access rates throughout the period at issue, there would have been a huge disparity between the growth in its receipts between June 2005 and December 2006 and the (far smaller) growth its in costs during that period.

TABLE 1

| | June 2005 | Aug. 2005 | Dec. 2006 |
|--|-----------|-----------|------------|
| Interstate Terminating Minutes per Month | 169,652 | 2,931,908 | 40,399,776 |
| % Growth in Terminating Interstate MOUs from June 2005 MOUs | N/A | 1628% | 23713% |
| Total Traffic-Sensitive Settlement per Month | \$13,311 | \$50,532 | \$462,757 |
| Percent Growth in Traffic-Sensitive Settlement from June 2005 | N/A | 280% | 3377% |
| Total Traffic-Sensitive Settlement per Minute | \$0.078 | \$0.017 | \$0.011 |

23. Based on the average schedule formulae for traffic sensitive settlements for the time period at issue in this Complaint, the effect of increasing minutes of use given a fixed number of lines is to decrease the settlement per MOU. In other words, as traffic volume increases, the total settlement *per minute* decreases. This can be seen in the bottom row of Table 1. This, too, is shown graphically below in Chart 1. This chart compares total monthly MOUs against a carrier's total traffic-sensitive monthly settlement and its "settlement per minute" under the currently applicable settlement formulae.

CHART 1 – Settlements Based on 2006-2007 Formulae



Notably, as indicated in this graph, at volumes above 100,000 MOUs per month, per-MOU costs (as represented by settlements) decline with each additional MOU. Thus, to the extent tariffed rates are based (as in Farmers's case) on usage figures that fall below actual usage, they are likely to over-recover the carrier's costs.

24. The NECA settlement formulae, approved by the Commission, reflect the principles discussed above: When a carrier such as Farmers experiences a substantial increase in access traffic volumes, but that increase is not accompanied by a similar rise in access line counts, its costs rise at a much slower pace than its receipts.

25. This concludes this Declaration.

I, Peter Copeland, declare under penalty of perjury that, to the best of my knowledge, the foregoing is true and correct.

A handwritten signature in cursive script, appearing to read "Peter Copeland", is written over a horizontal line.

Peter Copeland

Date: May 1, 2007